PATENT
574313-3154.1
USSN 09/760,574

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	AUDONNET *et al.*
Serial No.	:	09/760,574
Filing Date	:	January 16, 2001
For	:	IMPROVED DNA VACCINES FOR FARM ANIMALS, IN PARTICULAR BOVINES AND PORCINES
Examiner	:	Jon E. Angell
Art Unit	:	1635

745 Fifth Avenue
New York, NY 10151

EXPEDITED PROCEDURE
RESPONSE AFTER FINAL ACTION
UNDER 37 C.F.R. § 1.116

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I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

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Deborah L. Lu
Signature

8 April 2005
Date of Signature

DECLARATION OF DR. LORNE A. BABIUK

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, DR. LORNE A. BABIUK, DECLARE AND SAY THAT:

1. I make this declaration in connection with U.S. application Serial No. 09/760,574. I am familiar with its prosecution history, particularly the Office Action mailed on January 25, 2005.

2. I am the senior author of a review article by Sylvia van Drunen Littel-van den Hurk, Shawn L. Babiuk and Lorne A. Babiuk titled "Strategies for improved formulation and

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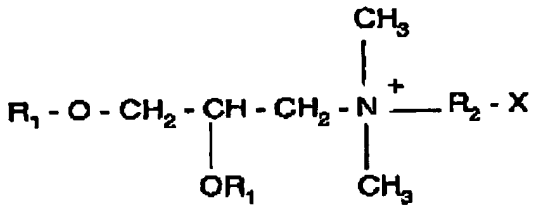
delivery of DNA vaccines to veterinary target species" published in Immunological Reviews 2004, Vol. 1999:113-125, hereinafter referred to as "Babiuk".

3. Attached is my Curriculum vitae. In view of my education, training and experience, I consider myself qualified to express opinions stated herein.

4. I understand that the present invention provides a DNA vaccine against a bovine pathogen comprising at least one plasmid that contains and expresses in a bovine host cell a nucleotide sequence encoding an immunogen of the bovine pathogen, wherein the bovine pathogen is BRSV, BVDV-1, BVDV-2 or bPI-3, and a cationic lipid containing a quaternary ammonium salt, of the formula



in which R_1 is a saturated or unsaturated linear aliphatic radical having 12 to 18 carbon atoms, R_2 is an aliphatic radical containing 2 or 3 carbon atoms, and X a hydroxyl or amine group.

5. I understand that Babiuk was cited in the Response to Office Action, dated November 3, 2004, as a review article summarizing the state of the art of DNA immunization of livestock and asserting that DNA immunization, although extremely successful in mice, significant barriers still exist in immunizing large animals in humans with DNA vaccines. I also understand that the Office Action mailed January 25, 2005 "acknowledged that Babiuk is a review article that summarizes the state of the art of DNA immunization", but stated "Babiuk is not considered to be the state of the art at the time of filing" (Office Action, page 6, paragraph 4).

6. I understand that the Office Action does not consider the teachings of Babiuk to be the state of the art at the time of filing. I understand that the Office Action asserts that Babiuk does not explicitly indicate that the specific bovine DNA vaccine of U.S. Patent No. 6,376,473 (hereinafter "the '473 patent") would not work in bovines and that Babiuk does not question the effectiveness of the '473 bovine DNA vaccine. I understand that the specific bovine vaccine of the '473 patent recites a DNA bovine respiratory syncytial virus (BRSV) vaccine comprising at least one plasmid that contains and expresses in vivo in a bovine host cell nucleic acid

molecule(s) having sequence(s) encoding bovine respiratory syncytial virus F protein, or G protein, or F and G proteins.

7. I understand that the present application was filed on January 16, 2001 and claims priority to applications filed on March 30, 2000 and January 16, 2000. Accordingly, I understand the time of filing of the present application to be on or around January 16, 2001, March 30, 2000 and January 16, 2000.

8. It is my opinion that on or around January 16, 2001, March 30, 2000 and January 16, 2000, it was known that immune responses could be induced in bovines, however, bovine DNA vaccines were impractical for commercial use. For example, large doses of DNA (about 500 μg to about 1 mg of DNA) were known to induce immunity in bovines, however, such large doses were impractical for economical vaccination in cattle. Accordingly, there was a need in the art to improve the efficacy of DNA vaccination in bovines. However, methods that increased the efficacy of DNA vaccines in mice did not necessarily extrapolate to large animals. Accordingly, there was no reasonable expectation of success that methods that increased the efficacy of DNA vaccines in mice would extrapolate to bovines.

9. It is my opinion that one of ordinary skill in the art would not assume that adding the adjuvant of claim 1 to a bovine DNA vaccine (e.g., the vaccine of the '473 patent) would necessarily result in an efficacious vaccine. In fact, an article by Serge Harpin, David J. Hurley, Majambu Mbikay, Brian Talbot and Youssef Elazhary titled "Vaccination of cattle with a DNA plasmid encoding the bovine viral diarrhoea virus major glycoprotein E2" published in the Journal of General Virology 1999, Vol. 80:3137-3144, hereinafter referred to as "Harpin", taught away from using liposomes as an adjuvant for DNA vaccines in bovines. Harpin described administering a DNA vaccine to cattle in the presence or absence of a cationic liposome. The cattle immunized with naked DNA showed variable levels of protection from disease after challenge, whereas, in contrast, the cattle immunized with the DNA vaccine with the cationic liposome were not protected (see, e.g., page 3142, right column, second paragraph of Harpin). Accordingly, there was no reasonable expectation of success that the cationic lipids of the present invention would improve the efficacy of a bovine DNA vaccine.

10. All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true. These statements were made with the

knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: April 8

Lorne A Babiuk

DR. LORNE A. BABIUK